IK1332 Internet of Things 7.5 credits

Sakernas internet

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from the autumn semester 2021 in accordance with Head of School decision: J-2021-0878.Decision date: 15/04/2021

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

- Completed course IK1203 Networks and communication 7.5 credits, or an equivalent.
- Completed course ID1018 Programming I 7.5 credits, or an equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Having passed the course, the student should be able to:

- describe at a general level system architectures for different existing technologies for the Internet of Things (IoT)
- describe communications protocols related to IoT and machine to machine communication (M2M)
- explain how the network layer supports IoT systems
- configure and design IoT services with existing technologies
- from a broad perspective explain challenges concerning sustainability, safety, integrity, and ethics for IoT technology.

For the highest grade the student should also be able to:

- explain the structure of system architecture and the life cycle for different existing technologies for IoT
- solve general resource allocation problems concerning IoT networks
- compare different communications protocols related to IoT and machine to machine communication
- analyse performance and reliability for existing IoT systems
- analyse IoT systems with regard to sustainability, safety, integrity, and ethics.

Course contents

- System architecture for IoT and associated business models.
- Infrastructure for IoT: LoRa-Wan, 6LoWPAN, 5G and SigFox.
- Operating systems and programming environments for embedded units, for example, Linux, TinyOS and Contiki.
- Application protocols for the transfer of sensor data, for example, MQTT and CoAP.
- Application areas and associated system requirements.
- Sustainability, safety, privacy, energy, and ethics concerning IoT systems.

Examination

- PRO1 - Project, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Exam, 3.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.